

EXPERIMENT NO. 13

MEASUREMENT OF RELATIVE WATER CONTENT OF LEAF

PRINCIPLE

Major mass of plant cell is composed of water. Approximately 80 to 90% mass of growing plant tissues including leaf is composed of water. Measurement of relative water content (RWC) in leaf tissues are commonly used to assess the water status of plants. Leaf water status is intimately related to several leaf physiological activities, such as leaf turgor, growth, stomatal conductance, transpiration, photosynthesis and respiration. Deficiency of water creates adverse effects on metabolic processes that hinder growth and development of plants. Relative water content (RWC) of leaf can be measured employing the following formula.

$$\text{RWC (\%)} = \frac{\text{Fresh weight} - \text{Dry weight}}{\text{Turgid weight} - \text{Dry weight}} \times 100$$

REQUIREMENTS

Leaf sample, Scissor, Balance, Beaker, Petri dish, Brown paper packet, Blotting paper, Distilled water, Hot air oven

PROCEDURE

Measurements of RWC were performed on leaves collected from either one-year old potted seedlings, or from branches of mature trees. Leaves were always collected from the mid section of either branches or seedlings, in order to minimize age effects. At first leaves were cut into small pieces (1cm x 1cm). Around one gram of leaf sample was weighed for each which is considered as fresh weight. Subsequently, they were immersed in double distilled water for 4 hours to absorb water inside a closed petri dish. After which, the leaves were removed from water, surface water was removed by blotting paper and turgid weight of each sample was recorded. The leaves were then dried at $80 \pm 1^{\circ}\text{C}$ in a hot air oven for 48 hours and dry weight was recorded. Using the formula relative water content (RWC) of leaf samples were determined and expressed in per cent.

OBSERVATION

Sample Content	Fresh weight (g)	Turgid weight (g)	Dry weight(g)	Relative Water%
-------------------	------------------	-------------------	---------------	-----------------

A

B

CALCULATION

RESULT

CONCLUSION